NOVEMBER, 1905.

ENTOMOLOGICAL NEWS

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Cryptohalictoides spiniferus Viereck.

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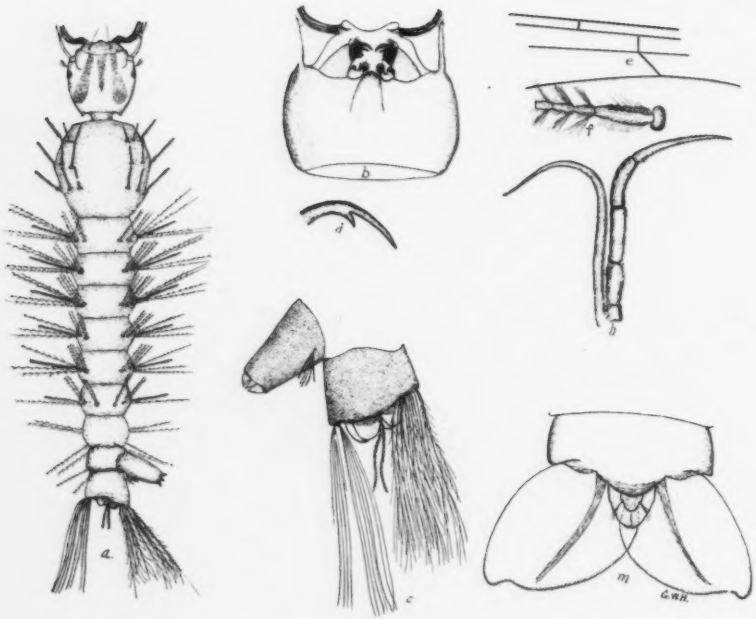


MEGARHINUS PORTORICENSIS

a. Larva of *M. portoricensis.*
b. Under side of head showing mandible.
c. Last anal segment with anal flaps.
d. The larger claw of the midtarsi ♂.
e. Cross-veins of wing ♂.
f. First five segments of antenna ♂.
h. Palpus and beak ♂.
m. Anal flaps of pupa.

ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

VOL. XVI. NOVEMBER, 1905. No. 9.

CONTENTS:

Herrick—Notes on some Mississippi Mosquitoes 281
Williams—Notes on the Life History of Hepialus Sequoiolus..... 283
Girault—Descriptions of two new Hymenopterous Egg-parasites..... 287
Skinner—Descriptions of New Coleoptera from Arizona..... 289
Nason—Parasitic Hymenoptera of Algonquin, Illinois—II 293
Williamson—Itinerary of a Collecting Trip, made especially in search of Dragonflies in Central America..... 299
Smith—Letter to Editors..... 306
Editorial 309
Notes and News 310
Doings of Societies..... 311

Notes on Some Mississippi Mosquitoes.

BY GLENN W. HERRICK, Agricultural College, Mississippi.

In our campaign against *Stegomyia*, *Anopheles*, and other species of mosquitoes here at the college during the present season, we have taken several interesting adults, some of which are worthy of note.

Megarhinus portoricensis.—In the cup-like bottom of a massive iron post supporting one corner of a large water tank, where the former rested on the masonry, were found the larvæ of the foregoing species. The receptacle in the post was about twelve inches deep and half full of rain water. Here we found five large dark brown, very spiny larvæ and also remnants of cast pupal skins, conspicuous for their long spines made especially prominent by the colonies of Vorticellæ clinging to them. Other larvæ, *C. pipiens*, were present in the water.

The larva of *Megarhinus* reminds one strongly, at first glance, of that of *Psorophora*, except that it is much darker in color and noticeably thicker and heavier. It is remarkable for the

number and character of the spines, for the short, rounded anal flaps, and for the strong mandibles fitting it for a carnivorous existence. We fed the larvæ entirely on *Culex* larvæ and great numbers of the latter were devoured. For example, three *Megarhinus* larvæ in four days ate 83 large *Culex* larvæ, besides many small ones just hatched from eggs put in by us but which we could not count. The abdomen of the larva bristles with long, slender, much branched spines. The thorax carries conspicuous, short, stiff, dark spines and two spines of the same character are found on each of the abdominal segment (a, Plate X). The larvæ transformed to pupæ on September 28th.

The pupæ are not strikingly different from those of other mosquitoes except, of course, in size. They are somewhat larger and darker than those of *Psorophora*, and most of the abdominal segments have a few long, slender spines. The respiratory tubes are long and open obliquely. The pupal stage of two pupæ lasted four days while that of the third extended over a period of five days. The anal flaps seem to have a characteristic shape (m, Plate X) and the edges, for the most part, are beset with short, stiff spines.

We reared three adult males from the larvæ and they differ somewhat from Mr. Theobald's description given in his Monograph of the Culicidæ, Vol. I, page 232. He says the penultimate segment of the palpi is as long as the last. In the three specimens bred, the penultimate segments were only half as long as the last (h, Plate X). Moreover, the head is bluish green (iridescent) instead of brown and the penultimate segments of the hind tarsi are white except a black ring at the distal ends. These variations are hardly enough to establish a new species and Mr. Coquillett, to whom I referred the specimens, says they are undoubtedly *portoricensis*.

In addition to the foregoing species we find *Megarhinus rutila*, common here, in fact more numerous than *portoricensis*.

Stegomyia fasciata.—Among the specimens of this mosquito taken here we find a variety in which the abdomen is creamy white, except the last segment. It corresponds with Theobald's variety, *queenslandensis*, except that the mid lobe of the scutellum is all white instead of blue.

We have specimens of *S. fasciata* from Biloxi, Tillman, Raymond, Summit and Agricultural College. Without doubt it is widely distributed in the states.

Anopheles.—We have taken a fourth species of this genus, undoubtedly *niger*.

Melanoconion.—Several species of this genus are common in this State. The larvæ and pupæ occur abundantly in ponds and ditches when the water contains plenty of Algæ. I have taken the larvæ in deep water among the surface Algæ about an old log. They are remarkable for their long respiratory tubes which are dark on the distal fourths. The anal flaps are long and slender. The antennæ are covered (sparsely) with short dark spines and at the offsets, about two-thirds of their length, is a whorl of many much-branched bristles. The ends of the antennæ are beset with four stiff, black spines. The antennæ are black at the bases and on the distal thirds from the offsets. We have taken *indecorabilis*, *humilis*, and *atratus*.

Other Species.—In addition to the foregoing and to those mentioned in Bull. 74 of this Expt. Stat., we have taken *C. tæniorhynchus*, Ocean Springs; *C. signifer*, Agricultural College; *C. triseriatus*, Agricultural College; *C. discolor*, Agricultural College; *C. sylvestris*, Agricultural College; *C. fatigans*, Agricultural College; *Grabhamia sollicitans*, Ocean Springs; *Psorophora howardii*, Agricultural College; *Uranotænia sapphirina*, Agricultural College.

Notes on the Life History of Hepialus Sequoiolus Behrens.

By Francis X. Williams, San Francisco, Cal.

During the months of November and December, 1904, I collected about two dozen mature *H. sequoiolus* larvæ from the stems of the yellow lupine (*Lupinus arboreus*). Of these larvæ about one-half of their number pupated, and nine pupæ produced imagines, six ♂ ♂ and three ♀ ♀. Mould is a very fatal disease among these larvæ which always keep their galleries wet; as many as twelve full-grown larvæ could be found in one large lupine trunk, but never more than half that number was alive, the rest being whitened corpses.

Some of my larvæ which I placed together with lupine stumps in a large glass aquarium half filled with sandy soil, buried themselves in the latter, others were contented with holes in lupine into which I introduced them. These latter immediately closed the entrance to the burrows with particles of wood fastened together with silk, those which had descended into the soil pupated therein mostly in January and February. The larvæ in the lupine appeared to hibernate as well as those in the earth, as they ate little or nothing and did not pupate for some time.

The cocoons formed below the surface of the soil do not differ essentially from those spun in the lupine. Both vary in

Hepialus sequoiolus, Fig. 1, mature larva.

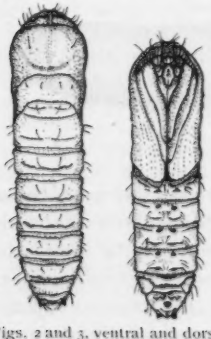
length, some being hardly two inches long, while others are as much as six inches or even more in length.

Those cocoons spun in the soil extend vertically in the same to within a fraction of an inch from its surface. Grains of earth loosely attached to the cocoon form a weak outer covering. The cocoon itself is quite thin but of strong texture, dirty white or brown, cylindrical in form, usually more pointed below and weakly closed at its summit. In making this cocoon which requires several days, the larva appears to work by night, rounding off the cocoon, smoothing its sides and probably enlarging it by strking the wall of the cocoon with its strongly chitinized head which together with the forepart of its body it vibrates rapidly from side to side. This procedure continues for two or three seconds at a time and when the cocoon is spun against a hard surface, this vibration produces a sharp rattling noise audible from quite a distance. When the vibration ceases the larva resumes its spinning until more thumping is necessary. The cocoon being finished the larva retires to its basal part where, in the course of a few days or in some cases in a few weeks, the pupa is formed. Those larvæ

pupating later in spring probably require less time for pupation than those which pupate in winter.

I do not know for certainty whether *H. sequoiolus* pupates in the soil in nature, but judging from the number of deserted galleries in the lupine as well as from the small size of the roots of *Helenium puberulum* on which it also feeds, it is probable that it pupates in the earth in nature as well as in the stems of its food-plants.

The cocoons formed in the lupine stems usually connect with the exterior by a turn of the gallery in which they are spun, in other cases they open between forking branches. The cocoon is the whole length of the gallery which is closed below with tightly packed woody fibres if formerly extended. The outer end of the gallery opens through the bark. The cocoon is often partly surrounded by woody fibres chewed into bits, is more or less pointed at its lower end and weakly closed at the entrance of the gallery by chips of wood and bark. The pupa fits snugly into this cocoon which often becomes mouldy; the former in common with others of the same family is capable of considerable activity, moving backwards and forwards with ease. It is light amber, becoming reddish-brown on the dorsum of thorax and head, the third abdominal segment is capable of slight motion, the fourth, fifth and sixth being flexible while the seventh is fused with the remaining three segments. From figures 2 and 3, it will be seen that the pupa is of nearly uniform thickness bearing a few setæ and provided with rows of teeth on the abdominal segments, those on the venter of the seventh segment being especially well developed. The cephalic end of the pupa bears two roughened projections useful in breaking through the cocoon. A medium sized pupa is 21 mm. in length.



Figs. 2 and 3, ventral and dorsal aspect of pupa.

When the time for emergence is at hand, the pupa by the aid of its teeth, and by vigorous wriggling, reaches the

outer end of the cocoon where it is extruded as in the Ægeridæ and Cossidæ, the pupal shell bursts and the moth is liberated. As far as I could observe, the imagines always emerged in the afternoon and as early in the season as February. A few larvæ did not pupate till May, when they developed into moths a few weeks later.

Late in April while examining yellow lupine for borers, I had the good fortune of finding a pupa partly extruded from a trunk. Soon a fine ♀ emerged which developed rapidly. The ♀ ♀ are, as a rule, larger than the ♂ ♂ and less variable. When it is growing dark the ♂ ♂ commence their oscillating flight which is sustained only for fifteen or twenty minutes when they alight. This oscillating flight is continued over the same spot, the arcs described are of ten or twelve inches. The ♀ ♀, much less frequently seen, fly rather heavily and, as in the ♂ ♂, close to the ground; they lay their eggs when on the wing, throwing them out rapidly. The eggs are very minute, turning black after a time; a single ♀ lays a great many. These insects are very easily recognized when on the wing by their peculiar flight and form; they are of many colors, whitish, slate, red, black and other shades with the silvery fascia usually very prominent in the ♂ ♂ and rarely so in the ♀ ♀.

Concerning the habits of the larvæ, these inhabit only old plants boring in their thicker portions, sometimes going well into the roots and again ascending into the branches. Usually,

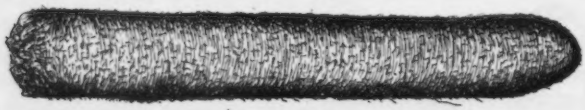


Fig. 4, cocoon found in lupine.

however, they are found in the main trunk above or below ground; a large decumbent stem is a particularly favorable locality for them. In the same lupine stem may be found the larvæ of the large noctuid, *Gortyna immanis*, quite sluggish as compared with *sequoiolus*. The larva of *H. sequoiolus* appears to have no insect enemies; in all the larvæ which I have found

I have discovered no parasites. Mould, however, more than makes up the deficiency of insect enemies, for it is very evident that it reduces the number of larvæ by one-half or more. The ♀ lays an immense number of eggs but the family Hepialidæ is apparently an unsuccessful one for the imagos are always comparatively scarce. In past years they were more plentiful, but now the progress of civilization has wiped out many of the favorite haunts of *Hepialus sequoiolus* so that at present it is a rather rare insect.

Descriptions of two new Hymenopterous Egg-parasites.

By A. Arsene Girault, Washington, D. C.

Paracentrobia flavipes sp. nov.

Female.—Length 0.81 mm.—Body bright yellow, the head a shade deeper; legs, venation, cheeks below the eyes, portions of the face, pronotum, pleura and tegulæ, and caudal margins of the abdominal segments, dilute black, forming a beautiful contrast to the yellow of the body, the abdomen thus with five dusky rings. Articulations of the legs; the anterior tibiæ, and tarsi; the basal two-thirds of the tibiæ and the tarsi of the intermediate legs; the basal tibiæ and the tarsi of the posterior legs; and the knees, pale yellow. Tips of the tarsi dark. Eyes and ocelli deep red, the latter three in number, in a triangle on the vertex. Submarginal vein paler.

Head rounded slightly; deeper in color than the body; the vertex much swollen, transversely striate, eyes ovate, coarse; mandibles falcate, tridentate at tips, the outer tooth slightly the largest; in color, apical half reddish brown, basal half pale. Thorax subconvex, shorter than abdomen; faintly longitudinally striate, the metanotum acute. Abdomen cylindric oval, longer than thorax, the ovipositor visible, acute, pale yellowish; caudal segment of abdomen obliquely truncate. Wings short and broad, marginal fringes short. The whole body with scattered stiff hairs, arranged more regularly on the abdomen and antennæ.

Antennæ sub-concolorous with thorax, a little dusky because hispid; 7-jointed, scape, pedicel, ring-joint, 1-jointed funicle, 3-jointed club. Scape nearly as long as pedicel and funicle combined; pedicel oval, much shorter than the funicle joint; the latter and basal joint of club subequal, the funicle joint longer and cylindrical oval; club inversely club-shaped, its basal joint subhemispherical, the second much smaller, obtusely conical, its apical joint still much smaller, narrower, acutely conical. Basal joint of the club the broadest, the apical joint the narrowest of all the antennal joints. Ring-joint very flat, as broad as the base of the funicle joint; inconspicuous.

From two specimens.

Male.—Length, 0.78 mm.—The same. Caudal segment of abdomen obtusely rounded, the abdomen itself less stout.

Antennæ 7-jointed, short, with a scape, pedicel, a ring-joint, 1-jointed funicle, and a 3-jointed club. Scape long, cylindrical, tinged above with dusky, nearly twice the length of the pedicel; the latter obovate, smaller than the funicle joint, but about equal to it in length. Ring-joint nearly as broad as the funicle joint at base, difficult to distinguish. Funicle joint nearly globular, slightly longer than broad, subequal in length to the pedicel. Club ovate, or subconical, its base somewhat rounded, the longest joint of the flagellum, but not as long as the scape; hispid, indistinctly 3-jointed, apparently solid, the middle joint the largest.

From three specimens.

Supposedly bred from the eggs of *Anthonomus quadrigibbus* Say, in the fruit of *Cratægus*, sent in by Mr. J. H. Beattie from Fort Valley, Georgia, in connection with the Deciduous Fruit-insect Investigations, Bureau of Entomology, United States Department of Agriculture, June 12, 1905. Probably, however, from some Lepidopterous egg found concealed under the calyx end of the fruit. Occasional.

Type.—No. 8942, U. S. N. M.

There is some uncertainty in regard to the generic position of this species, and finally it may prove to be the type of a new genus.

In structure, the antennæ apparently disagree with any of the known genera.

Gonatocerus anthonomi sp. nov

Female.—Length, 0.83-0.87 mm., 0.85 mm., avg.—Head and thorax piceous black, shining, the abdomen suffused with brown, piceous along the sides and towards apex, its basal segment lighter in color. The front of the head with a distinct inverted V-shaped marking of pale, reaching from a point on the vertex to the lower inner margin of eye. The margins of the eyes pale. On the thorax, there is an oblique longitudinal pale streak, distinct or indistinct. Legs honey yellow, excepting the whole of the middle of the femora, the posterior femora, the coxæ, portions of basal joint of trochanters, and most, if not quite the whole, of the tibiæ, excepting the anterior tibiæ, all of which are blackish. Tips of the tarsi darker. Antennæ dull reddish brown with some black, excepting the scape and pedicel, which are yellowish, tinged with blackish along the upper edges.

Head deeply concave along the face; eyes and ocelli dark. Thorax impunctate, faintly shagreened, about as broad and stout as the abdomen. Abdomen pointed, subsagittate; the first segment faintly striate, with a round fovea at base; the middle segments about equal. Wings

normal, iridescent, with a purplish hue to naked eye; marginal fringe rather long; venation dusky yellowish. Body bearing sparse short whitish hairs.

Antennæ 11-jointed, elbowed. Scape long, its base slender, slightly curved, as long as the next four joints combined; pedicel short, oval, much longer than the following joint; 3, 4, and 5, shortest, subequal, 5 slightly longer, each about half the length of the pedicel, globular; 6 longer and wider, next the smallest joint after 3, 4, and 5; 7 the longest funicle joint, cylindrical, much thicker than 6, and slightly more so than 8, equal in width to 9 and 10; 8 smaller than 9 and 10, larger than 4; 9 next the longest funicle joint, equal in width to 7 and 10, the latter short but longer than 4; 11 or the club, about as long as 8, 9, and 10 combined, the thickest joint cylindrical. Antennæ pubescent, shorter than body.

From three specimens.

Male.—Length, 0.81 mm.—The same. More slender. Antennæ 13-jointed, filiform. Scape short, longer than the following joint, the latter, the pedicel, rounded, not half as long as the first funicle joint. The following joints cylindrical, about equal, or slightly longer cephalad. Apical joint, or the club, subconical.

From a single specimen.

Bred supposedly from the eggs of *Anthonomus quadrigibbus* Say, in the fruit of *Cratægus*, June 18, 1905, sent in by Mr. J H. Beattie from Fort Valley, Georgia, in connection with the Deciduous Fruit Insect Investigations, Bureau of Entomology, United States Department of Agriculture.

Type.—No. 8435, U. S. N. M. 1 ♂, 1 ♀.

Descriptions of New Coleoptera from Arizona with Notes on Some other Species.

By Henry Skinner.

Plusiotis beyeri n. sp.

Form oval, somewhat elongate; surface bright apple green. Head sparsely punctate, clypeal margin narrowly reflexed. Antennæ piceous, basal joints rose pink. Thorax not twice as wide as long, a little narower at apex, broadest at middle, hind angles nearly rectangular, surface finely punctate with no admixture of coarser punctures. Elytra very little wider at base than the thorax, broadest at the middle, surface very obsoletely striate, the striations under a lens appearing confused. Body beneath lighter and of a more golden tint; metasternum coarsely punctate. Legs entirely rose pink with a pearly opalescence, except the femora of the first pair which are golden apple green. Length 31 mm.

This species is quite different from its closest ally *P. woodii* Horn. It is larger, more elongate, with the elytral margin having a pronounced outward curve near the centre. The legs are entirely and strikingly different in color from those of *woodii*, the latter being bright green with the tarsi metallic violaceous. The hind tibiæ are less spined and pitted in *beyeri* which has an entirely different facies. It has more the general appearance of some of the species of *Chrysina*. About a year ago I received a specimen from Reef, Cochise County, Arizona, and have also examined one in Mr. Wenzel's collection presumably from the same place in the Huachuca Mountains. During the past summer I saw a number of specimens taken by Messrs. Beyer, Schaeffer and Biederman, and learned that the species had been distributed in collections under the name *Plusiotis woodii* Horn. Named in honor of Mr. G. Beyer, of New York, that enthusiastic and indefatigable collector who has done such good work in making better known many rare species. Described from four specimens, two from Carr Canyon, one from Miller Canyon, Huachuca Mountains, Arizona, and one in Mr. Wenzel's collection probably from the same mountains. I wrote to Dr. H. C. Wood, of Philadelphia, in regard to the exact locality of *Plusiotis woodii* and received the following reply: "The beetles you speak of were, I believe, collected near El Paso, Texas. Certainly either there or in the valley of Tornellias (spelt from memory) creek in the great bend of the Rio Grande, as these were the only places at which our expedition touched the Rio Grande." *Plusiotis gloriosa* was taken commonly at about five thousand feet elevation and *P. lecontei* is believed to be fairly abundant above six thousand feet in both Carr and Ramsey Canyons, although but few specimens were found.

Acanthocinus linearis n. sp.

Head covered with dense pubescence, composed of a mixture of brown and gray hairs. Antennæ brown with alternating gray patches. Thorax vinaceous buff, pubescent with black punctuation and lateral line or fascia of velvety brown; central dorsal surface with a wide longitudinal band or fascia of dark brown, in some specimens broken into three distinct lines. Abdomen with mixed pubescence of gray and white (vinaceous buff?). Humeri same color as the thorax; basal two-thirds of elytra heavily pu-

bescent with the brown hairs predominating. Lower or apical third ferruginous, separated from basal third by an oblique raised ferruginous stripe, composed of three elevations. This oblique stripe will serve to separate this species from its allies. Length, ♂, 12.5 mm.; ♀, 14 mm., including ovipositor 19 mm.

This fine and distinct species is from the same locality as the others herein described. Six specimens. August, 1905.

Oncideres quercus n. sp.

Elongate and convex, densely clothed with light gray pubescence. Thorax wider than long, narrowed behind the lateral tubercle. Bases of elytra with dense ferruginous pubescence, with the same character of spots on the apical third, some of which near the apex are yellowish. Length 12 mm.

This species is allied to *texana* Horn, but slenderer, less robust, lighter in color and the elytral spots more distinct, raised and differentiated from the elytron. Described from two specimens taken in Carr Canyon, Huachuca Mountains, Southern Arizona, in August. Probably half the oak trees at about five thousand feet elevation had branches and twigs severed by this species, and it must be quite abundant but is difficult to see and find, except when at work cutting off branches.

Prionus heros Fall, was fairly abundant and its hum just at dusk was a common sound.

Lypsimena tigrina n. sp.

Entire beetle light grey with linear dashes of black on the elytra arranged as follows from base to apex: One, two, four, two. Of the apical two spots one is cardioid and the other linear. The thorax has three black dots in the form of a triangle. The antennal joints are half black and half grey. Length 12 mm.

This is a very handsome and distinctly marked species and is the largest in the genus. Described from one specimen from Carr Canyon, Hucahuca Mountains, Arizona, and one in the Horn collection from Southern Texas.

An interesting find was *Ophistomis ventralis* Horn, described from El Taste, Southern California.

Clerus bimaculatus n. sp.

Head, thorax, abdomen and legs brown, pubescent, obsoletely punctate. Elytra brown, with a central, round, pink or flesh colored spot; the lower or apical third of the elytra covered by course hairs which

make up part of the maculation or ornamentation. The pink spots may also be considered a central fascia sharply interrupted in the middle by the elytral suture. The color of the elytron posterior to these spots is darker in color, almost piceous. Length 11 mm.

This species is most nearly allied to *quadrisignata* Say, and was common in Carr Canyon in August. It is a large and handsome species.

Cymatodera tricolor n. sp.

Form moderately slender, sparsely pubescent. Antennæ pale brown; anterior and middle legs brown, posterior pair dark brown, almost black. Head and outer third of the thorax very dark green, a red band crossing the thorax at the middle, the basal third of the thorax red. Abdominal segments black. There is a yellowish white median fascia, narrowest at the suture; anterior to this is a black band of about the same width and from this black band to the base of the elytra is red. From the fascia to the apex the elytra are piceous.

It is perhaps more nearly related to *belfragei* than to any other species. It is very striking and distinct. From one specimen, Carr Canyon, Huachuca Mountains, Arizona. I hope to publish a list of the Coleoptera I took in Arizona and will mention at this time a few rarities.

Byrsopolis lanigera Bates.

Biol. Cent.-Amer. Coleop. ii, pt. ii, p. 291, a large and handsome lamellicorn was taken (3 specimens).

Pasimachus mexicanus a beautiful species. *Euphoria holochloris* recently described by Prof. Fall was fairly common. *Amblychila baroni* which appears to be quite distinct from *A. cylindriformis* and a much smaller species. It is still very rare in collections.

DESPITE the prevalence in Germantown, Philadelphia, of the praying mantis, the queer bug from Japan, to many people it is still a terror. A pupil in one of the public schools in that district found a nest of the insect's eggs on the branch of a tree the other day, and thinking it was a butterfly's cocoon took it to her teacher. It was hung up in the school room and soon showed signs of life, but instead of the butterfly came hundreds of bugs which looked like large mosquitoes. They could not fly, but crawled around on the branch with such threatening aspect that the teacher, afraid to touch them, was compelled to dismiss the class. The janitor was called in, but promptly refused to tackle the job of removing the mantids until, upon further urging, he got a bucket and, with the aid of a long scrubbing brush-handle, dropped the branch into it. Then he clapped a cover on the bucket and removed the perfectly harmless insects, and the pursuit of education was resumed.—*Newspaper.*

Parasitic Hymenoptera of Algonquin, Illinois.—II.*

By Wm. A. Nason, M.D.

ALYSIIDÆ.

Cratospila ferrugineus Ashm. n.sp.
2 specimens, ♂, ♀.
July 22, 1894.
Sept. 17, 1895.
Co-types, type in Ashm. coll.

Mesothesis abdominalis Ashm.n.sp.
1 specimen, ♂.
Type in Ashm. coll.

Aphæreta muscæ Ashm.
11 specimens, ♂, ♀.
Aug. 20, 1894.
Aug. 1 to Oct. 3, 1895.

Asobara illinoisensis Ashm. n. sp.
1 specimen, ♀.
Type in Ashm. coll.

Coloboma americana Ashm. n. sp.
1 specimen ♀.
Type in Ashm. coll.

Delocarpa dimidiata Ashm.
4 specimens.
July 3 to 15, 1894.

Aspilota caudata Prov.
6 specimens ♀.
Oct. 4, 1893.
May 25 to June 8, 1894.
June 4, 1895.

Aspilota davisii Ashm.
1 specimen ♂.
May 21, 1896.

Pachysema americana Ashm.
1 specimen ♂.
October 5, 1895.

Cœlinius meromyzæ Forbes.
9 specimens ♁.
Aug. 10 to Sept. 4, 1894.
July 16 to Oct. 5, 1895.
May 13, 1896.

Rhizarcha rubricincta Ashm.
2 specimens ♂.
June 12, 15, 1895.
Co-types, type in Ashm. coll.

Dacnusa crassitela Prov.
4 specimens ♁, ♀.
Aug. 31, 1894.
June 3, 1895.
May 21, June 1, 1896.

Dacnusa illinoisensis Ashm.
6 specimens ♁, ♀.
May 8, 10, 1895.
Co-types, type in Ashm. coll.

Dacnusa læviceps Cr.
1 specimen ♀.
June 2, 1896.

Dacnusa spatulata Prov.
4 specimens ♂, ♀.
June 2 to Sept 2, 1895.

BRACONIDÆ.

Ephedrus incompletus Prov.
1 specimen ♂.
Sept. 17, 1895.

Praon simulans Prov.
1 specimen ♀.
Oct. 2, 1895.

Aphidius avenaphis Fitch.
2 specimens ♀.
May 9, 1894.
Oct. 5, 1895.

Aphidius nigriceps Ashm.
1 specimen ♀.
Aug. 30, 1894.

Aphidius obscuripes Ashm.
2 specimens ♀.
Sept. 17, Oct. 2, 1895.

Trioxys ovalis Prov.
1 specimen ♀.
May 2, 1896.

Peristenus mellipes Cr.
4 specimens ♂, ♀.
Aug. 8, 10, 1895.

Lipolexis chenopodiaphis Ashm.
1 specimen.
Oct. 2, 1895.

* Determinations were all made by Dr. Wm. H. Ashmead, of Washington, D. C.

Lipolexis rapæ Curt.
3 specimens ♀.
Aug. 7, 1894.
Oct. 5, 10, 1895.
Perilitus dorsalis Ashm.
5 specimens ♂, ♀.
Aug. 31, 1894.
July 23 to Oct. 2, 1895.
May 25, 1896.
Perilitus gastrophysæ Ashm.
1 specimen ♀.
Oct. 2, 1895.
Meteorus communis Cr.
2 specimens ♂, ♀.
July 12, Sept. 2, 1895.
Meteorus gracilis Prov.
4 specimens ♂.
June 19 to Aug. 31, 1894.
Sept. 2, 5, 1895.
Meteorus intermedius Cr.
2 specimens ♂.
June 13, 17, 1896.
Meteorus orchesiæ Ashm.
1 specimen ♀.
May 13, 1896.
Meteorus proximus Cr.
2 specimens ♂, ♀.
June 4, July 3, 1895.
Meteorus politus Prov.
16 specimens ♂, ♀.
June 4 to Sept. 4, 1894.
Aug. 1, 12, 1895.
Meteorus robustus Prov.
6 specimens ♂, ♀.
Sept. 4, 1894.
June 10, 1896.
Meteorus vulgaris Cr.
7 specimens ♂, ♀.
June 28 to Sept. 14, 1894.
May 23 to July 19, 1895.
Macrocentrus delicatus Cr.
5 specimens ♂, ♀.
May 8 to June 18, 1896.
Macrocentrus iridescens French.
1 specimen ♀.
June 10, 1896.

Amicoplus crambi Ashm.
1 specimen ♂.
Sept. 2, 1895.
Amicoplus iridescens French.
2 specimens ♂, ♀.
Aug. 31, 1894.
Helcon ligator Say.
7 specimens ♂, ♀.
June 15, 1895.
Blacus defectuosus Prov.
1 specimen ♀.
Nov. 6, 1895.
Blacus nanus Ashm.
11 specimens ♀.
July 20 to Oct. 18, 1895.
Blacus rufipes Ashm.
1 specimen ♂.
May 2, 1894.
Orgilus fuscipes n. sp. Ashm.
5 specimens ♂, ♀.
June 4 to Aug. 12, 1895.
Co-types, type in Ashm. coll.
Orgilus mellipes Say.
27 specimens ♂, ♀.
May 12 to Sept 3, 1894.
May 20 to Sept. 10, 1895.
April 29 to June 17, 1896.
Eubadizon americanus Cr.
31 specimens ♂, ♀.
June 4, 1894.
May 20 to June 6, 1896.
Eubadizon phymatodis Ashm.
9 specimens ♂.
June 2, 3, 1895.
Allurus lævis Cr.
1 specimen ♂.
June 6, 1896.
Allurus orchasiæ Ashm.
1 specimen ♂.
May 10, 1896.
Calyptus crassigaster Prov.
3 specimens ♂, ♀.
In Ashm. coll.
Calyptus tibiator Cr.
1 specimen ♂.
May 25, 1895.

Cenocœlius populator Say.
2 specimens ♂, ♀.
Cenocœlius rubriceps Prov.
1 specimen ♂.
July 4, 1894.
Sigalphus calogeni Ashm.
1 specimen ♀.
June 6, 1896.
Schizoprymnus texanus Cr.
2 specimens ♀.
July 10, 1895.
Chelonus basicinctus Prov.
2 specimens ♂, ♀.
Aug. 1, 9, 1895.
Chelonus electus Cr.
1 specimen ♀.
June 12, 1895.
Chelonus fissus Prov.
3 specimens ♀.
June 8, 1894.
Sept. 4, 1894.
Chelonus insularis Cr.
1 specimen ♂.
Aug. 12, 1895.
Chelonus iridescens Cr.
1 specimen.
Aug. 16, 1895.
Chelonus lunatus Hald.
1 specimen ♀.
July 3, 1895.
Chelonus rufiscapus Prov.
1 specimen ♀.
Aug. 8, 1895.
Chelonus sericeus Say.
1 specimen ♂.
Aug. 7, 1895.
Ascogaster intermedius Ash. MSS.
3 specimens ♂, ♀.
Aug. 25, 26, 1894.
Co-types, types in Ashm. coll.
Ascogaster pilosifrons Ash. n. sp.
1 specimen.
Type in Ashm. coll.
Ascogaster proximus Ashm.
1 specimen ♀.
June 4, 1894.
Phaneraloma tibialis Hald.
1 specimen ♀.
June 10, 1895.
Cremnops semirubra Brullé.
5 specimens ♂, ♀.
June 28, 1895.
Agathirsia divisus Cr.
2 specimens ♀.
Aug. 30, 1894.
Microdus annulipes Cr.
3 specimens ♀.
June 29, 1895.
May 21, 23, 1896.
Microdus discolor Cr.
1 specimen ♀.
Aug. 10, 1895.
Microdus earinoides Cr.
6 specimens ♂, ♀.
June 10, 14, 1894.
July 18, 1895.
Microdus laticinctus Cr.
2 specimens ♂, ♀.
June 14, 1894.
Microdus simillimus Cr.
7 specimens ♂, ♀.
June 14, 1894.
Aug. 16, 1895.
May 26 to June 17, 1896.
Earinus limitaris Say.
1 specimen ♂.
Protapanteles femurnigrum Prov.
1 specimen ♀.
June 10, 1896.
Apanteles algonquinus Ash. MSS.
1 specimen ♂.
Aug. 12, 1895.
Co-type, type in Ashm. coll.
Apanteles carduicola Pack.
1 specimen ♂.
Oct. 17, 1894.
Apanteles carpatus Say.
1 specimen ♀.
June 26, 1894.
Apanteles cinctus Prov.
1 specimen ♀.
Sept. 15, 1895.

Apanteles columbianus Ashm.
2 specimens ♀.
Co-type, type in Ashm. coll.
Apanteles congregatus Say.
5 specimens ♂.
Sept 4 to Oct. 5, 1895,
Apanteles cramboides Ashm.
1 specimen ♂.
Aug. 12, 1895.
Apanteles cyanides Riley.
1 specimen ♀.
May 21, 1896.
Apanteles ensiger Say.
4 specimens ♀.
May 24 to Aug. 12, 1895.
Apanteles eupetheciæ Ashm. MSS.
1 specimen ♀.
Type in Ashm. coll.
Apanteles flaviconchæ Riley.
1 specimen ♂.
Aug. 9, 1895.
Apanteles forbesii Ashm.
11 specimens ♂, ♀.
Sept. 4, 1894.
June 11 to Aug. 12, 1895.
Apanteles glomeratus L.
21 specimens ♂, ♀.
July 6 to Oct. 27, 1895.
May 8 to June 15, 1896.
Apanteles hartii Ashm.
7 specimens ♁, ♀.
Aug. 26, 30, 1894.
May 3 to Sept. 20, 1895.
Apanteles nasonii Ashm. MSS.
2 specimens ♂.
Sept. 21, 1894.
Co-types, type in Ashm. coll.
Apanteles xylina Say.
17 specimens ♂, ♀.
May 9 to July 3, 1895.
May 3 to June 16, 1896.
Pseudapanteles tortricis Ashm.
1 specimen ♀.
In Ashm. coll.
Microgaster carinatus Pack.
1 specimen ♁.
Microgaster brevicaudus Prov.
6 specimens ♂, ♀.
June 10 to Sept. 20, 1895.
Microgaster gelechiæ Riley.
1 specimen ♀.
June 24, 1895.
Microgaster zonatus Say.
9 specimens ♀.
Sept. 17 to 22, 1895.
Urogaster carinaria Ashm.
1 specimen ♀.
June 10, 1896.
Urogaster ensiger Say.
1 specimen ♀.
April 16, 1896.
Urogaster forbesii Ashm.
10 specimens ♁, ♀.
May 18 to June 15, 1896.
Urogaster hartii Ashm.
5 specimens ♀.
May 21 to June 10, 1896.
Microplitis atrocoxalis Ashm.
4 specimens ♁.
May 21 to June 10, 1896.
Microplitis ceratominæ Riley.
2 specimens ♁.
Aug. 1, Oct. 5, 1895.
Microplitis cinctus Ashm.
2 specimens ♂.
June 11, 1894.
June 10, 1896.
Microplitis forbesii Ashm. n. sp.
1 specimen.
Type in Ashmead collection.
Microplitis gortynæ Riley.
1 specimen ♂.
May 26, 1896.
Microplitis illinoisensis Ashm.
1 specimen ♂.
Microplitis maturus Wied.
4 specimens ♂, ♀.
Oct. 9, 1893.
July 12, 1895.
Microplitis ohioensis Ashm.
1 specimen ♀.
Aug. 16, 1895.

Microplitis similis Ashm.
1 specimen ♂.
June 10, 1896.
Microplitis sphingis Ashm.
1 specimen ♀.
Zeletes pallipes Prov.
5 specimens ♂, ♀.
May 25, Sept. 19, 1894.
Aug. 24, Sept. 3, 1895.
Zeletes rufipes Ashm. n. sp.
2 specimens ♂.
Sept. 14, 1894.
Type in Ashm. coll.
Bioisteres anthonomyiæ Ashm.
5 specimens ♂, ♀.
Oct. 3, 1895.
May 21, 26, 1896.
Allotypus rufocinctus Ashm.
1 specimen ♀.
Type in Ashm. coll.
Desmiostoma algonquinus A. n.sp.
1 specimen ♂.
Type in Ashm. coll.
Utetes algonquinus Ashm. n. sp.
1 specimen ♀.
July 17, 1895.
Co-type, type in Ashm. coll.
Opius algonquinus Ashm. n. sp.
9 specimens ♂, ♀.
July 10 to Oct. 16, 1895,
May 13 to June 10, 1896.
Co-types, type in Ashm. coll.
Opius brunneiventris Cr.
1 specimen.
Aug. 24, 1895.
Opius dimidiatus Ashm. n. sp.
5 specimens ♂, ♀.
Sept. 4, 1894.
June 2 to Aug. 12, 1895.
Co-types, type in Ashm. coll.
Opius minutissimus Ashm. n. sp.
26 specimens ♂, ♀.
May 10 to June 15, 1896.
Co-types, type in Ashm. coll.
Melanobracon simplex Cr.
2 specimens ♀.
Melanobracon charus Riley.
3 specimens ♂, ♀.
Sept. 3, 1895.
Melanobracon rugosiventris Ashm.
3 specimens ♂, ♀.
July 27, 1895.
Bracon apicatus Prov.
1 specimen ♀.
June 27, 1895.
Bracon ? argutator Say.
1 specimen ♂.
Sept. 17, 1895.
Bracon cookii Ashm.
2 specimens ♂, ♀.
June 8, July 11, 1895.
Bracon dorsata Say.
2 specimens ♂, ♀.
Oct. 16, 1895.
June 13, 1896.
Bracon juncicola Ashm.
1 specimen ♀.
Aug. 31, 1894.
Bracon lativentris Ashm.
10 specimens ♂, ♀.
April 18 to Oct. 16, 1894.
Bracon longicaudus Prov.
1 specimen.
June 11, 1895.
Bracon lixi Ashm.
3 specimens ♀.
Aug. 10, Sept. 2 to 21, 1895.
Bracon nigetor Say.
1 specimen ♂.
July 25, 1895.
Bracon opaciceps Ashm.
1 specimen ♀.
June 19, 1895.
Bracon pirrodes Ashm.
1 specimen ♀.
July 26, 1895.
Bracon saperdæ Ashm.
1 specimen ♀.
June 18, 1896.
Bracon scrutator Say.
3 specimens ♂, ♀.
Aug. 12, Aug. 30, 1894.

Bracon trifolii Ashm.
2 specimens ♂, ♀.
Aug. 30, 1894.
Bracon vernoniæ Ashm.
1 specimen ♀.
July 10, 1894.
Bracon xanthostymus Cr.
3 specimens ♀.
July 23, Aug. 1, Sept. 15, 1895.
Gnamptodon flavibasilaris Ashm.
2 specimens ♂.
May 21, 1896.
Co-types, type in Ashm. coll.
Iphiaulax eurygaster Br.
1 specimen ♀.
Tropidobracon connatus Ashm.
2 specimens.
May 13, June 16, 1896.
Tropidobracon gasteroidea Ashm.
2 specimens.
May 8, June 16, 1896.
Tropidobracon ruficentris A. n. sp.
1 specimen ♀.
Type in Ashm. coll.
Habrobracon hebetor Say.
4 specimens ♂, ♀.
Sept. 17, 1895.
Nov. 4, 1895.
Nov. 6, 1895.
Liobracon nigrolineatus Ashm.
1 specimen ♀.
Sept. 21, 1894.
Liobracon nuperus Cr.
5 specimens ♂, ♀.
Sept. 15, 1895.
Sept. 16, 1895.
Clinocentris mellipes Ashm.
1 specimen ♀.
Clinocentris minimus Ashm.
1 specimen ♀.
July 20, 1895.
Clinocentrus niger Ashm.
1 specimen ♂.
Sept. 21, 1894.
Rhyssalus loxotiniæ Ashm.
2 specimens ♂, ♀.
May 21, 1896.
June 10, 1896.
Rhogas abdominalis Cr.
1 specimen ♀.
June 1. 1896.
Rhogas intermedius Cr.
6 specimens ♂, ♀.
Aug. 30, 1894.
Sept. 21, 1894.
Aug. 12, 1895.
Sept. 17, 1895.
Rhogas nasonii Ash. n. sp.
1 specimen ♂.
Type in Ashm. coll.
Rhogas parasiticus Nort.
5 specimens ♀.
Aug. 26 to Sept. 21, 1894.
Rhogas plecyplerygia Ashm.
1 specimen ♀.
Oct. 16, 1895.
Rhogas stigmator Say.
1 specimen ♀.
July 25, 1895.
Rhogas terminalis Cr.
36 specimens ♂, ♀.
June 6 to Sept. 4, 1894.
June 6 to Sept. 10, 1895.
Doryctes rufiventris
3 specimens ♀.
Dorycles rugosus Prov.
1 specimen ♀.
Chremylus nigriventris Ash. n. sp.
1 specimen.
Type in Ashm. coll.
Chremylus terminalis Ashm.
1 specimen ♂.
May 28, 1896.
Hormius erythrogaster Ashm.
2 specimens ♀.
Sept. 21, 1894.
July 20, 1895.
Hormius melleus Ashm.
2 specimens ♀.
Sept. 16, 1893.
May 13, 1896
Cænophanes anthaxiæ Ashm.
2 specimens ♀.
May 13. 19, 1895.
Cænophanes languriæ Ashm.
2 specimens ♂, ♀.
June 4, July 3, 1895.
Spathius canadensis Ashm.
1 specimen ♀.
Spathius simillimus Ashm.
1 specimen ♀.
May 20, 1896.
Spathius trifasciatus Riley.
5 specimens ♂, ♀.
June 19, 1894.
Oct. 2, 1895.

ADDITIONAL SPECIES.

Megastygmus illinoisensis A. n. sp.
1 specimen ♀.
Type in Ashm. coll.
Amiclus terminalis Ashm.
1 specimen ♀.
July 25, 1895.

Itinerary of a Collecting Trip, Made Especially in Search of Dragonflies, in Central America.

By E. B. Williamson, Bluffton, Indiana.

As the result of much planning and correspondence there met on board the steamer Taunton, lying at the dock in New Orleans, on January 5, 1905, the following party bound for a collecting and sight seeing trip in Central America, especially in Guatemala: Professor W. A. Kellerman, interested in parasitic fungi and tropical botany in general; Mr. and Mrs. C. C. Deam, interested in the higher plants and Lepidoptera; Mr. Newton Miller, interested in fish; Professor J. S. Hine, interested in insects and especially Diptera; and Mr. and Mrs. E. B. Williamson, interested in dragonflies.

During the trip collections in general were made, including birds, reptiles and several groups of invertebrates. The following itinerary, prepared at the request of Dr. Calvert, has for its purpose facility of reference to the dragonflies (to which I gave especial attention, collecting about 2700 specimens) which have been sent to Dr. Calvert for study in connection with the invaluable work he is doing for the Biologia Centrali-Americana. In addition to my own collecting, the material sent to Dr. Calvert includes collections in this order made by Professor Hine, Mr. and Mrs. Chas. C. Deam and Mrs. E. B. Williamson. Once in the tropics our party was much dispersed and in the following notes I speak only for myself.

January 9, 1905.—Landed from steamship Taunton at Belize, British Honduras, and spent about two hours, from eleven A. M. to one P. M., collecting along ditches and bits of marshes in and closely adjacent to the town. Weather rainy and dragonflies not abundant.

January 10, 1905.—Landed at Puerto Barrios, Guatemala, and took train about nine A. M. for Gualan. Passed through tropical swamp and wet tropical country for about sixty miles to where the railroad crosses the Motagua River. A few miles beyond this bridge, a region where the distinction between the rainy season and dry season is well marked is reached. From this point to El Rancho, the present inland terminus of the Ferrocarril del Norte de Guatemala, the country at this sea-

son grows more and more arid becoming, a few miles beyond Gualan, a desert region in which tree cacti flourish. Gualan is eighty miles from Puerto Barrios and 420 feet above sea-level. El Rancho, at an elevation of 901 feet, is nearly one hundred and thirty miles from Puerto Barrios. We arrived at Gualan about nine P. M.

January 11, 1905.—Vegetation about Gualan becoming dry and leafless, a small leguminous tree, resembling a peach in habit of growth and color of flowers, is in full bloom. Maize on the hill sides has been harvested and not replanted. Smaller streams have shrunken in volume and native gardens are being irrigated. About half a mile above station at Gualan the railroad crosses a tributary of the Motagua known as the Gualan River. On this date the Gualan River has an average width of about one hundred feet. The stream is divided by many bare islands which, like the bed, are composed of boulders and coarse gravel. A small tributary of the Gualan, just above the railroad bridge, is followed for some distance and Libellulines and smaller Agrionines are found in great abundance. Dragonflies are rare, almost wanting, along the main stream. A short distance above the mouth of this small tributary the Gualan River is formed by two nearly equal streams.

January 12, 1905.—Collected along the small tributary mentioned above and followed the Gualan River, nearly to its mouth, but with practically no success along the main stream.

January 13, 1905.—Collected for about one and one half miles along the left hand stream, which joins with a similar stream to form the Gualan River, and in irrigated fields and along ditches adjacent to this stream, as far as a village named Sing Sing, situated on the Honduras road.

January 14, 1905.—Same territory as January 13th.

January 15, 1905.—In fields and along the Gualan River, paying little attention to dragonflies. During these five days at Gualan the mornings were cloudy, but without rain, until about nine A. M. after which the sun shown uninterruptedly till sundown. Air very dry, temperature not oppressive, nights cool and with good breeze, no mosquitoes. Lizards of four easily distinguished species abundant. No snakes or tur-

tles seen, streams clear and fish few. Insects not abundant, apparently in quiescent state in many cases, seeking moisture by burying themselves beneath leaves and stones. Butterflies worn and not abundant. Vegetation not luxuriant, whitening on the mountain sides.

January 16, 1905.—At Los Amates, on the Motagua River, a station on the railroad, sixty miles from Puerto Barrios, railroad section 14, elevation 160 feet. The railroad is divided into sections of variable lengths, usually between four and five miles, and these sections are numbered from the coast towards the interior. Conditions about Los Amates are humid and tropical. Cannas and other large leaved Monocots, not observed commonly or at all at Gualan, are abundant. Bamboos grow to a large size. Rainfall abundant and likely to occur at any time of the day or night. Weather always cloudy and cool in the morning. Collected at a swamp near the railroad buildings and along a tributary of the Motagua about three-fourths mile below town. The swamp above mentioned is alonside the railroad track, its area is approximately three fourths acre. It is of very uniform depth, about two to two and one-half feet at this season. It is filled with small floating, grass-covered islands on which jacanas love to search for food. During sunshiny periods of the day before about four P. M. dragonflies are very abundant about this pond or swamp which contains many small fish. The tributary of the Motagua visited on this day has an average width, near the railroad bridge, of fifteen or twenty feet. Its banks are steep, more or less overhanging and beaches are rare. I followed the bed of this stream for possibly three-fourths mile. Much of this distance is in shade. Near this stream are a number of dark, quiet pools, shallow and shaded by Monaca palms and apparently devoid of odonate life.

January 17, 1905.—Crossed the Motagua and followed a trail at right angles to the river. Above the first hill is a flat prairie country of peculiar appearance. Small streams lose themselves in the rank grass which grows above one's head. Occasional low shrub clumps alone relieve the monotony of the immediate landscape. Below Los Amates the railroad crosses

this same prairie strip. Dragonflies here are scarce and usually immature as though adults sought more congenial surroundings,

January 18, 1905.—Along railroad track about a mile below town where, about quiet, dark shaded grass- and sedge-grown pools a species of dragonfly found nowhere else was taken.

January 19, 1905.—Followed the Izabal trail for a distance of one and one-half to two miles. Some very small streams cross the trail but dragonflies are scarce. Along this trail among the hills, a species each of pine and oak and an orchid in full flower are observed. Selaginellas carpet the ground, shaded by a variety of trees and palms. At Los Amates insects in general abundant. Butterflies fairly numerous and frequently freshly emerged. Birds numerous. A few turtles seen in pools along railroad track.

January 21, 1905.—Returned to Gualan to store material, which, unless artificially dried, could have been preserved with difficulty at Los Amates. Conditions at Gualan slightly drier than on January 11th, but otherwise practically the same. Were told that this drought continued till vegetation was largely parched, but that, when the rains began, usually in May, everything became green again almost in a night. And it was then, and during the months of June, July and August that insects (or at least butterflies) were most in evidence.

January 25, 1905.—Went from Gualan to El Rancho. At Zacapa, elevation 602 feet, on the Zacapa River, Deam and Miller collected a few dragonflies during the previous three days. Zacapa is a region well watered by numerous streams from which many small irrigating ditches are supplied. El Rancho with an elevation of 901 feet, is in a region at this date practically barren, excepting for the most xerophytic plants and along water courses. At sheltered places along the Motagua, dragonflies of a few species were numerous, but for considerable distances the river flows through a valley of boulders which are the bed of the stream during the rainy season.

January 27, 1905.—Enroute by mule from El Rancho to Sanarate. Many small mountain streams were encountered in this twenty-three miles journey and a few dragonflies were col-

lected during the day. The weather conditions are perfect for collecting, clear skies and little or no breeze.

January 28, 1905.—By mule from Sanarate to Guatemala City, forty-seven miles. A few dragonflies were collected along the trail.

January 29, 1905.—Sightseeing about Guatemala City. Weather clear and cool. *Pantala flavescens* seen at the principal cemetery of the city.

January 30, 1905.—Journeyed on Ferrocarril Central de Guatemala from Guatemala City to Escuintla. Collected along a stream a few miles south of Guatemala City, while the train stopped a few minutes at a station, and again at Laguna, the railroad station at the place where the railroad crosses Lake Amatitlan.

January 31, 1905.—Collected during the forenoon along a small stream near Escuintla. Escuintla, 1248 feet above sea level, is a flourishing town in a rich and beautiful country. Insects were abundant, the flora varied. Left Escuintla about noon by railroad and went to Santa Lucia where we arrived about two P. M. Santa Lucia is about a mile from the railroad. During the afternoon collected about open places in woods, banana fields and along roads where Libellulines were flying abundantly.

February 1, 1905.—In the morning collected along the river east of town and in the afternoon along a ravine west of town.

February 2, 1905, was spent in this ravine. Weather ideal for collecting, the mornings being cloudless from sunrise.

February 3, 1905.—Along a stream and its two tributaries east of Mazatenango, with an elevation of 1085 feet. Conditions similar to those at Santa Lucia.

February 4, 1905.—Collected for twenty minutes in the morning along a river west of Santa Maria, and in the afternoon in a mangrove swamp just back from the beach and just west of San Jose.* Mrs. Deam and Mrs. Williamson spent February 2nd, 3rd and 4th at Escuintla where they did some collecting.

* All the towns visited on the Pacific slope were reached from Guatemala City by the Ferrocarril Central de Guatemala.

February 5, 1905.—Explored country for a mile or two back from the coast during the morning in an effort to find Agrionines. Spent the remainder of the day in the mangrove swamp. With the exception of *Pantala flavescens* and *Orthemis ferruginea* no dragonflies were seen away from the mangrove swamps, and here only Libellulines were seen. These were fairly abundant especially in sunny spots.

February 6, 1905.—At Lake Amatitlan, at the extreme lower end of the lake and along its outlet just below the lake. Amatitlan has an elevation of 4212 feet.

February 7, 1905.—Along south shore of lake. Scarcity of dragonflies disappointing. Several acres of level marsh land were fairly filled with white water lilies in full bloom, but over or about this area not a dragonfly was to be found. The south side of the lake near outlet is largely sedgey though the descent to deep water is rather abrupt. In the afternoon along the north side of the lake. A road follows around this side which is precipitous, without beach in many places, the lake bed descending vertically, sedges in small isolated areas. During this day a large *Argia* seen nowhere else in Guatemala was taken. This note is inserted for the reason that nearly all the species of dragonflies collected were taken frequently and at many localities.

February 8, 1905.—Along south side of lake and about outlet in the forenoon. In the afternoon enroute Amatitlan to Guatemala City, collecting a few dragonflies at Laguna when the train stopped there. Laguna has an elevation of 3877 feet.

February 9, 1905. On the return trip to the Atlantic coast. A few specimens collected at Agua Caliente.

February 10, 1905.—A few specimens collected at Sanarate.

February 11, 1905.—Sanarate to El Rancho.

February 12, 1905.—El Rancho to Gualan.

February 13, 1905.—Gualan to Puerto Barrios. A few dragonflies collected to-day as opportunity offered when the train stopped at stations.

February 14, 1905.—Puerto Barrios to Livingston. Livingston is on a bluff about thirty feet high from which the ocean is visible in three directions.

February 15, 1905.—Went up Rio Dulce to Puerto de San Felipe, at outlet of Lake Izabal. Collected along the river within sight of the old fort.

February 16 and 17, 1905.—Weather very unfavorable, raining. Not well, suffering from tropical fever, contracted at San Jose.

February 18, 1905.—Spent several hours in a dugout paddled by Carib boy. Followed the left shore of Rio Dulce and explored two of its small tributaries. Weather bright during this time but breeze rather too strong for good collecting.

February 19 and 20, 1905.—Collected a little in immediate vicinity of Livingston as weather and health permitted. Collecting here the poorest found on the entire trip. About noon February 20th returned to Puerto Barrios.

February 21, 1905.—Landed in afternoon at Puerto Cortez, Honduras. Collected for a few minutes in Pontederias along wharf. Took train on Ferrocarril del Norte de Honduras to San Pedro Sula.

February 22, 1905.—San Pedro has an elevation of about 250 feet. It lies near the west side of the valley, the mountains beginning within a mile or two of the town. Collected about small prairie streams west and east of town.

February 23, 1905.—West of San Pedro along a small stream flowing in a northerly direction parallel to the mountain range and along small streams diverted from it for irrigating purposes. The city derives its water by a system of water works from this stream. Vegetation about San Pedro luxuriant, flora rich, but not especially tropical in appearance, suggesting greatly conditions frequently seen in Indiana in rank pasture fields and brush lots. Monaca palms, occasional coffee fields, and the very frequent banana plantations of course remind one that he is far from the wintry skies at home.

February 24 and 25, 1905.—West of San Pedro along same stream but further up the stream, spending most of the time in a low level pasture field which lies between the main stream and a smaller stream diverted from it.

February 26, 27 and 28, 1905.—Ravine two miles south of San Pedro reached by following the main street south, past the

slaughter houses. Where the road crosses the stream is only a short distance from where the stream leaves the mountain gulch. This ravine was explored for a distance back in the mountains of more than a mile. It is forest-shaded, deep, dark and noisy with waterfalls, apparently the last place in the world to expect sun-loving insects like dragonflies. February 26th, it rained nearly all day but during the three days spent in the ravine over three hundred dragonflies were taken.

March 1, 1905.—Enroute San Pedro to Puerto Cortez.

March 2, 1905.—Collected for three or four hours about the wharf at Puerto Cortez, and about two o'clock in the afternoon boarded the steamship Anselm bound for New Orleans.

The week February 21st to February 28th was spent at Puerto Barrios by Mr. Deam and a valuable lot of dragonflies were collected there by him, though the weather was very unfavorable, rain falling every day, and the sky being almost continually obscured by clouds.

To the Editors of Entomological News:

Dear Sirs:—In the October number of the News you reprint a circular of the National Mosquito Extermination Society, and among the names in the Advisory Board of Entomologists my own appears. Permit me to say that my name is used not only without my permission but in spite of a very decided protest on my part, made to the Secretary and apparent mouth-piece of the Society. Lest it seem strange that one so strongly identified with the anti-mosquito campaign as myself should decline to be concerned with a body whose expressed aims are in every respect laudable, I will ask permission to explain that while the professions of the Society are sound its actions through its Secretary are underhanded, dishonest and not in accord with recent developments as to practice.

For three years New Jersey had, through the writer, conducted a mosquito survey of the State and in the early days of 1905 had published an elaborate report on the results, following a preliminary report and bulletin, all of which were sent to Henry Clay Weeks, Secretary, etc. Yet at the 1905 session of the New Jersey Legislature, said Henry Clay Weeks, purporting

to be acting as Secretary, etc., procured the introduction of a bill to establish a commission to do exactly the work that had just been completed and reported upon, and, though my name appeared on the Advisory Board of Entomologists and Mr. Weeks had been kept advised of my work, no notice whatever was sent to me of the intent or introduction of the bill. It was a manifest attempt to sneak through a bit of legislation which the promoter was unwilling to bring to the notice of the official most concerned. Fortunately the ignorance behind the bill was equal to its dishonesty, and of the officials named as members of the Commission, the majority had no existence in New Jersey. The bill died the day I learned of its introduction.

In the report already referred to, I showed in detail that the Hackensack Meadows were not breeding places for mosquitoes except to a very insignificant extent; yet the investigation of the Hackensack Meadows formed a feature of the attempted investigation, either an intended reflection upon the work done under my direction or ignorance of its accomplishment.

In the reprinted circular the New Jersey–Staten Island problem is referred to as if it were a serious matter and many interests were to be considered; as a matter of fact the whole problem is solved and all the interests involved have been reconciled. Neither Mr. Weeks nor the Society for which he speaks has been consulted, and, therefore, may not know that so far as New Jersey is concerned more than half of the work involved in the New Jersey–Staten Island problem is already done; that so far as Staten Island is concerned a survey of the territory was made under my direction and a report made that $17,000 would do all the necessary work; that this sum was asked for by the New York Board of Health, duly appropriated by the Board of Estimate and Apportionment, and that a contract was actually made to mosquito-drain the salt marsh area of the entire Staten Island area for less than $16,000; proof that my judgment as to the cost of work to be done does not err in the direction of an underestimate.

It is always unpleasant to introduce a personal element into a matter of public concern, but in this case the publication of the circular in the NEWS leaves me no option. As at present

managed, the National Mosquito Extermination Society is, in my opinion, simply an attempt to advertise its Secretary, and not an effort directed to the extermination of the mosquito pest. The use of my name is quite as much without authority as was the use of that of Governor Murphy, of New Jersey, who was advertised, in spite of his emphatic refusal, as presiding officer at one of its meetings.—JOHN B. SMITH.

AN APPARENTLY NEW CHINCH-BUG.—A few years ago my wife found at San Geronimo, New Mexico, two specimens of an apparently new *Blissus* or chinch-bug. It was hoped that further specimens might be discovered to test the constancy of the characters observed, but as the species has not been seen again, and there is little chance of collecting in the same region, I place the find on record. The insect was referred to Mr. Heidemann, as the best authority on the subject, and he reported that in size and the reduction of the membrane to a small semi-circular band it agreed well with the description of *B. pulchellus* Montandon, from Costa Rica. It also showed a remarkable resemblance to the European *B. doriæ* Ferrari, especially in the downward sloping shape of the head. From the common *B. leucopterus* Say, Mr. Heidemann found it to differ thus: Eyes smaller, less protruding; the tylus shorter, not so prominent, and the head distinctly sloping downward anteriorly; elytra much shorter than in any of the brachypterous forms observed, the reduced circularly-formed membrane reaching not quite to the apex of the first dorsal segment, while in *leucopterus* the same is always longer, reaching nearly to the base of the second or even the third dorsal segment; antennæ comparatively shorter, less robust, with the ultimate joint not much longer than the second.—T. D. A. COCKERELL, Boulder, Colo.

IMPORTANT ANNOUNCEMENT CONCERNING THE DIVISION OF ENTOMOLOGY OF THE NORTH CAROLINA DEPARTMENT OF AGRICULTURE.—1.—On July 10, 1905, Mr. G. M. Bently resigned his position as Assistant Entomologist to accept the position of Assistant Entomologist at the Agricultural Experiment Station at Knoxville, Tenn., which is now his address.

2.—On September 15, 1905, the resignation of Mr. Franklin Sherman, Jr., as Entomologist will take effect, he having accepted the Professorship of Entomology and Zoology in the Ontario Agricultural College at Guelph, Canada, which will be his address after the first of September.

3.—Mr. R. S. Woglum, appointed as Assistant in place of Mr. Bentley, will be in charge of the entire work for the present. The appointment of other assistants will be made later.

4.—The "Bulletin" of the N. C. Department of Agriculture for May, 1905, deals with "Insect Enemies of Corn," and is by Mr. Sherman. It may be had by addressing a request to "N. C. Department of Agriculture, Raleigh, N. C"

5.—Neither Mr. Bentley nor Mr. Sherman resigned because of any dissatisfaction with the work here, but simply because their new positions offer them better inducements, which they could not afford to decline.

ENTOMOLOGICAL NEWS.

[The Conductors of ENTOMOLOGICAL NEWS solicit and will thankfully receive items of news likely to interest its readers from any source. The author's name will be given in each case, for the information of cataloguers and bibliographers.]

To Contributors.—All contributions will be considered and passed upon at our earliest convenience, and, as far as may be, will be published according to date of reception. ENTOMOLOGICAL NEWS has reached a circulation, both in numbers and circumference, as to make it necessary to put "copy" into the hands of the printer, for each number, three weeks before date of issue. This should be remembered in sending special or important matter for a certain issue. Twenty-five "extras," without change in form, will be given free, when they are wanted; and this should be so stated on the MS., along with the number desired. The receipt of all papers will be acknowledged.—ED.

PHILADELPHIA, PA., NOVEMBER, 1905.

The great importance of the study of insects in relation to the distribution of many diseases, would appear to necessitate a short course at least, on entomology, in our medical colleges. Some few years ago we called attention to the fact that a well known medical journal contained an article on malaria, in which the writer stated that the mosquitoes were spontaneously generated from decomposing vegetable matter in water. We have known of pediculosis being diagnosed as carpologia and a fatal prognosis given.

The effect of the "red-bug" (*Leptus irritans*) is usually diagnosed as hives and treated by cathartics and other internal medication.

We have also known the same thing to be diagnosed as a Syphiloderm. The New England Medical Monthly, p. 335, for August, this year, contains an editorial, "The Brown-Tail Moth Lesions" from which we quote: "During the past few weeks certain portions of New England, notably, New Hampshire and Massachusetts, have been infested by the brown-tail moth pest * * * * * large acres of territory in several States have been so widely infected that the extermination of the insect has become a most serious problem. While the bite of the moth demands some consideration, the skin lesions produced by contact with the caterpillar are of a much more serious character." * * * * If the moth bites, it is a scientific and medical fact of some importance and should be more generally known. We willingly confess our ignorance and acknowledge that we never have known a lepidopterous nsect that could bite in the imago stage.

Notes and News.

DR. EWALD BERGROTH, the well known Finnish dipterist, has emigrated to this country on account of the political difficulties of his native land, and after a summer in Alaska has settled in Seattle. His address is The Plaza, 1403 Third Avenue.

PROFESSOR J. M. ALDRICH has a year's leave of absence from the University of Idaho, which he is spending at Stanford University. His address is 325 Hamilton Avenue, Palo Alto, California.

"NEW" FACTS THAT ARE NOT NEW.—If some of our entomologists would take the trouble to do a little reading before printing their observations, they might save valuable space in the current magazines. Two cases in point occur in the October NEWS. Mr. Sherman records observations on *Harrisimemna trisignata* (page 254) and Miss Soule on *Telea polyphemus* (page 275).

The pupation of *Harrisimemna* has long been known, since 1840, when Harris wrote to Melsheimer (Ent. Corr. T. W. Harris, pp. 114, 174, 1869). The forming of the burrows is carefully described by Goodhue (Can. Ent., xviii, 58, 1886). Other references to the larva are found in Packard's Guide, p. 304, 1869; ENT. NEWS, vi, 340, 1895; Proc. U. S. Nat. Mus., xxi, 183, 1898 and Lugger's Fourth Rept. Ins. Minnesota, 157, 1898.

Concerning Mr. Sherman's query as to whether similar pupating habits are known in other Lepidoptera, the case of *Polygrammate hebraicum* occurs to me (Proc. U. S. Nat. Mus., xxi, 9 note, 1898). There are doubtless others. The use of wood chips in cocoons and the partial hollowing of wooden surfaces is common in many genera, e. g. *Apatela* among Noctuids, *Cerura* in Notodontians and *Tacoma* in Pyralids. The burrowing habit is doubtless a development of this.

The stemmed cocoons of *Telea polyphemus* referred to by Miss Soule, have been described by Grote (Proc. Am. Philos. Soc. xli, 401, 1902) and commented on by Cockle (Can. Ent, xxxv, 139, 1903).—HARRISON G. DYAR, Washington, D. C.

AT THE Field Meeting of the Newark, Brooklyn, New York and Philadelphia Entomological Societies at Jamesburg, N. J., on July 4, 1905, I was fortunate enough to capture twenty-two species of Tabanidæ.

Two of the species taken (*Chrysops cursim* and *C. mitis*) have not been recorded from New Jersey before. All the doubtful material has been kindly identified by Prof. Jas. S. Hine of the Ohio State University, to whom I am greatly indebted.

The following is a list of the species taken:

Chrysops callidus O. S.
" *pudicus* O. S.
" *cursim* Whitney.
" *flavidus* Wied.
" *univittatus* Macq.
" *lugens* Wied.
" *vittatus* Wied.
" *fallax* O. S.
" *obsoletus* Wied.
" *nigribimbo* Whitney.
" *mitis* O. S.*

Tabanus cinctus Fabr.
" *trispilus* Wied.
" *hinei* Johns.
" *astutus* O. S.
" *recedens* Walk.
" *pumilus* Macq.
" *lineola* Fabr.
" *costalis* Wied.
" *sagax* O. S.
" *stygius* Say.
" *superjumentarius* Whit.

H. S. HARBECK.

*Prof. Hine states in reference to specimen sent to him for identification "according to Osten Sacken's description this would be *mitis*."

Doings of Societies.

A stated meeting of the Feldman Collecting Social was held on the 21st of June, at the residence of Mr. H. W. Wenzel, No. 1523 South 13th Street, Philadelphia. There were eleven members present, and Mr C. F. Adams, of Chicago, visitor. Letters were read from Dr. D. M. Castle and Mr. Wenzel, Jr.

Dr. Calvert stated that in springs of 1902 and 1903 he had distributed young larvæ of *Tenodera sinensis* on different trees in the Botanical Gardens of the University of Pennsylvania, but that until this year there had been no imagos found; two specimens, however, were found by a student, one in May and the other in the early part of June of this year.

Mr. Laurent stated that he went to look for the same species at Germantown, and that he found it very rare.

Mr. Huntington showed photographs taken by the new color photo process.

Mr. Daecke reported taking the following insects at Rockhill, (near Perkasie, Pa.:) *Chrysops indus*, *Lagoa crispata*, *Thyris maculata*, and at Da Costa, N. J., the following: *Mantispa brunnea*, beaten from bushes, *Buprestis ultramarina*, *Coptodisca splendoriforella*, cocoons on pine bark, *Odospis* spec. ?, and *Enarmonia* spec. ?

Dr. Calvert spoke of the use of carbon tetrachloride as an insecticide.

FRANK HAIMBACH, *Secretary*.

A stated meeting of the Feldman Collecting Social was held September 20, 1905, at the residence of Mr. H. W. Wenzel, No. 1523 South 13th Street, Philadelphia. There were eleven members present, and Mr. Viereck visitor.

Dr. Henry Skinner gave a brief but very interesting sketch of his recent trip to Arizona.

Dr. D. M. Castle exhibited 56 species of Coleoptera collected at Bamber, N. J., on September 1st.

FRANK HAIMBACH, *Secretary*.

A meeting of the Entomological Section of the Academy of Natural Sciences of Philadelphia, was held September 28th, Mr. Philip Laurent, Director, presiding. 17 persons present. Dr. Skinner exhibited a specimen of *Amblychila baroni* which he had taken in the Huachuca Mountains in Arizona, and referred to the literature relating to the species.

Mr. Wenzel said he had seen the type of *baroni*, and the specimen exhibited, according to his recollection, was the same thing

Mr. Rehn said he had been commissioned by the State of Pennsylvania to examine the wharves, river fronts and incoming vessels at the quarantine station for *Stegomyia fasciata* but had not found any. He also reported that in company with Mr. Morgan Hebard he had spent eleven days in North Central Florida and took four thousand Orthoptera. They found *Stegomyia fasciata* common at Cedar Keys, and *Anopheles* and *Culex* on the steamer between Jacksonville and New York.

Mr. H. W. Wenzel exhibited beautiful specimens of the workings in wood of the following species of Scolytidæ: *Hylesinus opaculus, fasciatus, Chramesus icoriæ, Corthylus punctatissimus, Pityophthorus consimilis.*

Dr. Calvert exhibited specimens of *Amphiagrion* (*Hesperagrion*) *heterodoxum* Selys, from Mexico and Arizona, and plate VI of the Neuroptera volume, Biologia Centrali-Americana, to show the great range of color variation in this species. Data were given to show the basis for his opinion that these color differences are chiefly due to age, and in this respect he considered this species to be, perhaps, the most remarkable Odonate known to him.

Mr. Ilg exhibited the life histories of a number of moths and butterflies in Riker mounts.

Mr. Daecke said the older Jersey list contained sixteen species of *Chrysops*, and the later Johnson list added one species. During the past summer he had brought the record up to twenty-five species which includes two described by himself and one to be described by Prof. Hine. He was also studying the coloration of the eyes in this genus.

Mr. Laurent exhibited a specimen of *Papilio glaucus* which showed a large admixture of yellow. He also made some remarks on *Tenodera sinensis* and distributed specimens among the members. Brown marks on the tegmina were attributed to drops of water acting as a burning glass.

Mr. Wenzel said, about three years ago egg masses of this species had been placed at Anglesea, N. J., and recently a living imago had been sent to him from that place.

Mr. Rehn also reported the species from Atlantic City, N. J.

HENRY SKINNER, *Recorder.*

EXCHANGES.

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☞ These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and only when necessary those at the top (being longest in) are discontinued.

Have a number of books and pamphlets on Lepidoptera, also a zither to exchange for books not in my library, or for moths, geometers or micros.—Wm H. Broadwell, 275 High Street, Newark, N. J.

Correspondence wanted in order to exchange the common Lepidoptera of Cape Cod, for those from elsewhere.—Alfred C. Redfield, Barnstable, Mass.

Wanted.—Riley's 2d, 5th and 9th Misouri Reports. Will pay cash for same.—H. H. Newcomb, 43 Tremont Street, Boston Mass.

For Exchange.—Lepidoptera belonging to DeKalb County, Georgia, for specimens not found in that locality.—Robert Windsor Smith, Kirkwood, Georgia.

Proctotrypoidea Wanted.—Will identify specimens for privilege of study, or will take them in exchange for identified specimens of other groups.—C. T. Brues, Public Museum, Milwaukee, Wis.

Wanted.—As complete a named set as possible of the Pyralidæ of North America. Can offer fine named Indo-Malayan Lepidoptera in exchange. Ernest Swinhoe, 6 Gunterstone Road, West Kensington, London W, England.

Lepidoptera from Southern States wanted in quantity for cash.—Please make offer to Charles Faust, Harvard, Ill.

Elateridæ and *Buprestidæ* wanted from all parts of North America, in exchange for North American Coleoptera. Cash paid for special desiderata —C. O. Houghton, Del. Coll. Agric. Expt. Sta., Newark, Del.

Ova wanted.—I will pay 3 cents each for any number up to 100 of fertile eggs of *Enchætisa Orgenensis* accompanied by the parent female. —H. H. Lyman, 384 St. Paul Street, Montreal, Canada.

I have many fine specimens of Entomology in papers left over from last season and will exchange and collect in this locality for Southern and Western specimens.—C. H. Ross, Des Moines, Iowa.

Wanted to Exchange.—Butterflies and moths from every country in the world. Many beautiful foreign specimens to exchange. California specimens in large quantities.—R. C. Winslow, Santa Clara, California.

Wanted.—Insect Life, Vol. iii, 2, 4, 11, 12; iv, 5, 6, 7, 8, 9, 10; v, 3, 4; vi, 3. Also other works on economic entomology not in my library. Will pay cash or exchange.—J. C. Crawford, Box, 208, Dallas, Texas.

Wanted.—Records of Captures of Connecticut insects—especially the rarer species—for the preparation of a State list. Orthoptera and Hymenoptera records desired at once.—W. E. Britton, State Entomologist, New Haven, Conn.

Wanted mounted humming birds and other brilliant colored birds, in exchange for rare exotic, native butterflies and moths, cocoons of *Ceanothii*, *Gloverii* and pupæ and cocoons of other species.—C. F. Timm, 170 Bleeker St., Brooklyn, N. Y.

Cicindelidæ of the world desired. Good exchange offered.—H. F. Wickham, Iowa City, Iowa.

Wanted.—Specimens and data concerning parasitism by Strepsiptera (Stylopidæ). Correspondence solicited.—W. Dwight Pierce, Box 208, Dallas, Texas.

Will collect flies and bees.—L. R., Box 185, Fredericksburg, Va.

Lepidoptera.—Correspondence wanted (English or German) from Southern and Western States, Mexico and West Indies in order to exchange life material.—Ernst Jeheber, 118 Reservoir Street, Lancaster, Pennsylvania.

Lepidoptera.—*Lycænas* and *Theclas* either for cash or exchange.—H. H. Brehme, 44 Mercer Street, Newark, New Jersey.

Butterflies and *Cicindela* from Missouri, Colorado, Texas and Oklahoma also Catocalæ and Sphingidæ. Lists exchanged.—G. M. Dodge, Louisiana, Mo.

For Exchange.—Small kodak, a stamp collection (of 550 varieties) with or without album, and a number of books on Entomology and Geology for Lepidoptera.—Wm. H. Broadwell, 209 Plane Street, Newark, N. J.

Wanted.—Butterflies and moths from every country in the world.—Metzger & Haag, 16 Gladys Street, Rochester, New York.

Wanted.—Papers on Coleoptera, both North American and foreign. Will purchase or exchange for other scientific and entomological publications.—L. R. Reynolds, Box 1293, Seattle, Wash.

Dytiscidæ from all parts of Texas and California, Lower California and Lake Superior region (especially the north shore), wanted by purchase or exchange.—John D. Sherman, Jr., 390 Halsey Street, Brooklyn, New York.

For Exchange.—Coleoptera, identified, Sphingidæ, Lepidoptera, Catocala, including relicta, bianca and phrynia, Samia columbia, all from this region. A. W. Andrews, 186 Lothrop Ave., Detroit, Mich.

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